

THREE GENERA REMOVED FROM THE
SYNONYMY OF *PINNOTHERES* BOSCH, 1802
(BRACHYURA: PINNOTHERIDAE)

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Abstract. — Three genera, *Arcotheres* Bürger, 1895, *Holothuriophilus* Nauck, 1880, and *Zaops* Rathbun, 1900, are removed from the synonymy of *Pinnotheres* Bosc, 1802. *Arcotheres* contains only its type species from the Indo-West Pacific, *A. palaensis* (Bürger, 1895). *Holothuriophilus* is represented by two species from the eastern Pacific, its type species *H. trapeziformis* Nauck, 1880 and *H. pacificus* (Poëppig, 1836), a senior synonym of *H. silvestrii* (Nobili, 1901), a species previously assigned to *Pinnaxodes* Heller, 1865. *Zaops* contains a western Atlantic species, *Z. ostreum* (Say, 1817), the American oyster pea crab; *Z. ostreum* is an adult and a senior synonym of the type species of *Zaops*, *Pinnotheres depressum* Say, 1817.

Ongoing studies on some Atlantic species of *Pinnotheres* prompted me to review the status of its synonyms. As a result of this review, I believe that three genera synonymized with *Pinnotheres* Bosc, 1802 by Rathbun (1918), Schmitt et al. (1973), and Manning & Holthuis (1981), e.g., *Arcotheres* Bürger, 1895, *Holothuriophilus* Nauck, 1880, and *Zaops* Rathbun, 1900, should be recognized as separate genera.

Five other pinnotherid genera have been recognized since the summary of pinnotherid taxa was published by Schmitt et al. (1973), as follows:

Indopinnixa Manning & Morton, 1987 [type species *Indopinnixa sipunculana* Manning & Morton, 1987] is a member of the Pinnothereliinae and is not considered further here; all of the other newly recognized genera listed here are members of the subfamily Pinnotherinae.

Calyptraeotheres Campos, 1990 [type species *Fabia granti* Glassell, 1933] differs from *Pinnotheres* in having a two-segmented mandibular palp.

Clypeasterophilus Campos & Griffith, 1990 [type species *Dissodactylus rugatus*

Bouvier, 1917] resembles *Dissodactylus* Smith, 1870 and differs from *Pinnotheres* in having the dactyli of the walking legs bifid as well as in having the three segments of the mandibular palp placed end-to-end.

Limotheres Holthuis, 1975 [type species *Limotheres nasutus* Holthuis, 1975] also differs from *Pinnotheres* in having the segments of the third maxilliped placed end-to-end; it further differs in having a projecting, triangular rostrum and three longitudinal postfrontal grooves on the carapace.

Tumidootheres Campos, 1989a [type species *Pinnotheres margarita* Smith, 1869; the genus also includes *T. maculatus* (Say, 1818)] differs from *Pinnotheres* in having (a) the dactyli of the walking legs dissimilar and unequal, that of the fifth leg much the longest, and (b) a spatulate dactylus on the palp of the third maxilliped, inserted near midlength of the propodus and not extending beyond the propodus. As pointed out by Campos (1989a:693) the dactylus of the third maxilliped in the type species of *Pinnotheres*, the European *P. pisum* (Linnaeus, 1767), is styliiform and inserted basally on

the ventral margin of the propodus; the dactyli of the walking legs in *P. pisum* are similar and subequal.

One genus previously considered to be a pinnotherid has been removed from the family. *Mortensenella* Rathbun, 1909 [type species *Mortensenella forceps* Rathbun, 1909] was transferred from the Pinnotheridae to the subfamily Camptandriinae of the Ocypodidae by Harminto & Ng (1991).

The genus *Orthotheres* Sakai, 1969 [type species *Orthotheres turboe* Sakai, 1969], in which the segments of the palp of the third maxilliped are placed end-to-end, was reviewed by Campos (1989b); it contains some species previously assigned to *Fabia* and *Pinnotheres*.

Judging from the accounts in Davidson (1968) of *Cryptophrys concharum* Rathbun, 1893, the type species of *Cryptophrys* Rathbun, 1893, and of *Fabia subquadrata* Dana, 1851, the type species of *Fabia* Dana, 1851, I believe that there may be grounds to consider these two genera as distinct, an action that is beyond the scope of this paper. *Cryptophrys* and *Fabia* are now regarded as synonyms (Schmitt et al. 1973:22).

The diagnoses given below will distinguish each genus from *Pinnotheres* s.s. In the diagnoses, pereopods are indicated by their abbreviations, e.g., P1 to P5 (P1 is the cheliped, P5 the last leg or the fourth walking leg). In the legends, measurements are given as carapace length \times carapace width, in millimeters. USNM is an acronym for the National Museum of Natural History, Smithsonian Institution, Washington.

Arcotheres Bürger, 1895

Fig. 1

Arcotheres Bürger, 1895:361.

Type species. — *Pinnotheres palaensis* Bürger, 1895, by subsequent designation by Rathbun (1918:62). Gender masculine.

Diagnosis. — Carapace subhexagonal. Third maxilliped with ischium and merus

indistinguishably fused; exopod with flagellum; palp 3-segmented; propodus much longer than carpus; spatulate dactylus inserted proximally on ventral margin of propodus, not extending to apex of propodus. Dactyli of walking legs dissimilar, those of the third (P4) and fourth (P5) walking legs longer than and different from dactyli of first (P2) and second (P3) walking legs in both sexes. Abdomen of 7 segments in each sex.

Remarks. — *Arcotheres* differs from *Pinnotheres* in having the dactyli of the last two walking legs longer than and different from the dactyli of the first two, and in having a spatulate rather than styliform dactylus on the third maxilliped.

Known only from the type species from the Indo-West Pacific. In pelecypods.

Holothuriophilus Nauck, 1880

Figs. 2–3

Holothuriophilus Nauck, 1880:66. Name no. 319 on Official List of Generic Names in Zoology.

Type species. — *Holothuriophilus trapeziformis* Nauck, 1880, by original designation and monotypy. Gender masculine.

Diagnosis. — Carapace broader than long, subrectangular. Third maxilliped with ischium and merus indistinguishably fused; exopod with flagellum; palp 3-segmented; propodus shorter than carpus, conical; spatulate dactylus articulated basally on propodus, extending beyond end of propodus. Dactyli of walking legs similar and subequal, short. Abdomen of 7 segments in both sexes.

Remarks. — I consider *Holothuriophilus* to be a valid genus distinct from *Pinnaxodes*. It differs (a) in carapace shape, with the greatest width of the carapace anterior to the midlength in *Holothuriophilus*, posterior to the midlength in *Pinnaxodes*; (b) in the proportions of the walking legs which are short and stout, with very short dactyli

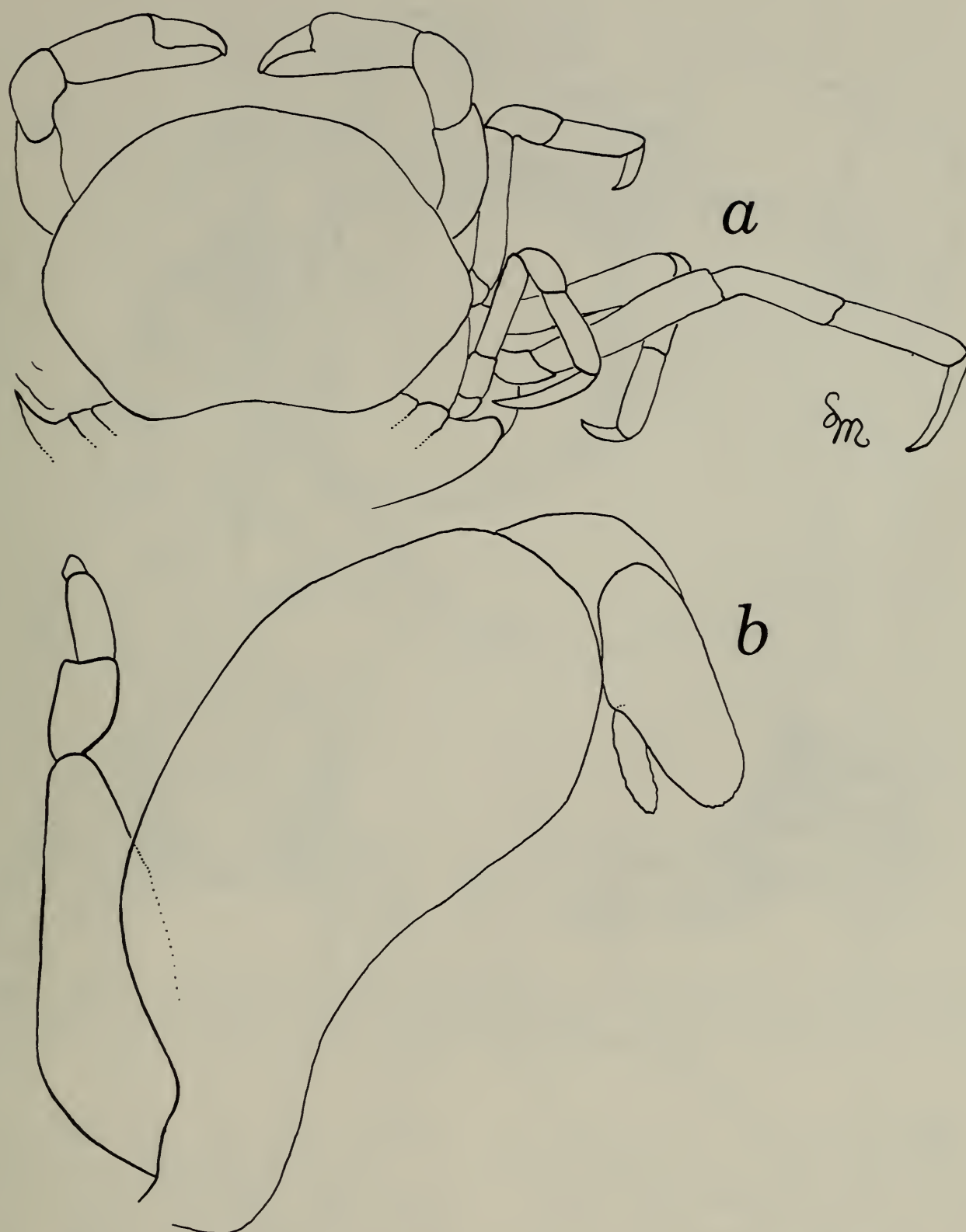


Fig. 1. *Arcotheres palaensis* Bürger, spent female, 7.8 × 11.1 mm, Philippines, USNM 256948. a, Dorsal view (walking legs of left side omitted; extent of abdomen indicated on both sides); b, Third maxilliped.

in *Holothuriophilus*, slender and elongate with long dactyli in *Pinnaxodes*; and (c) in the structure of the third maxilliped, which has a suture between the ischium and merus

in *Pinnaxodes* whereas these segments are indistinguishably fused in *Holothuriophilus*. Members of *Pinnaxodes* inhabit echinoids, whereas species of *Holothuriophilus* inhabit

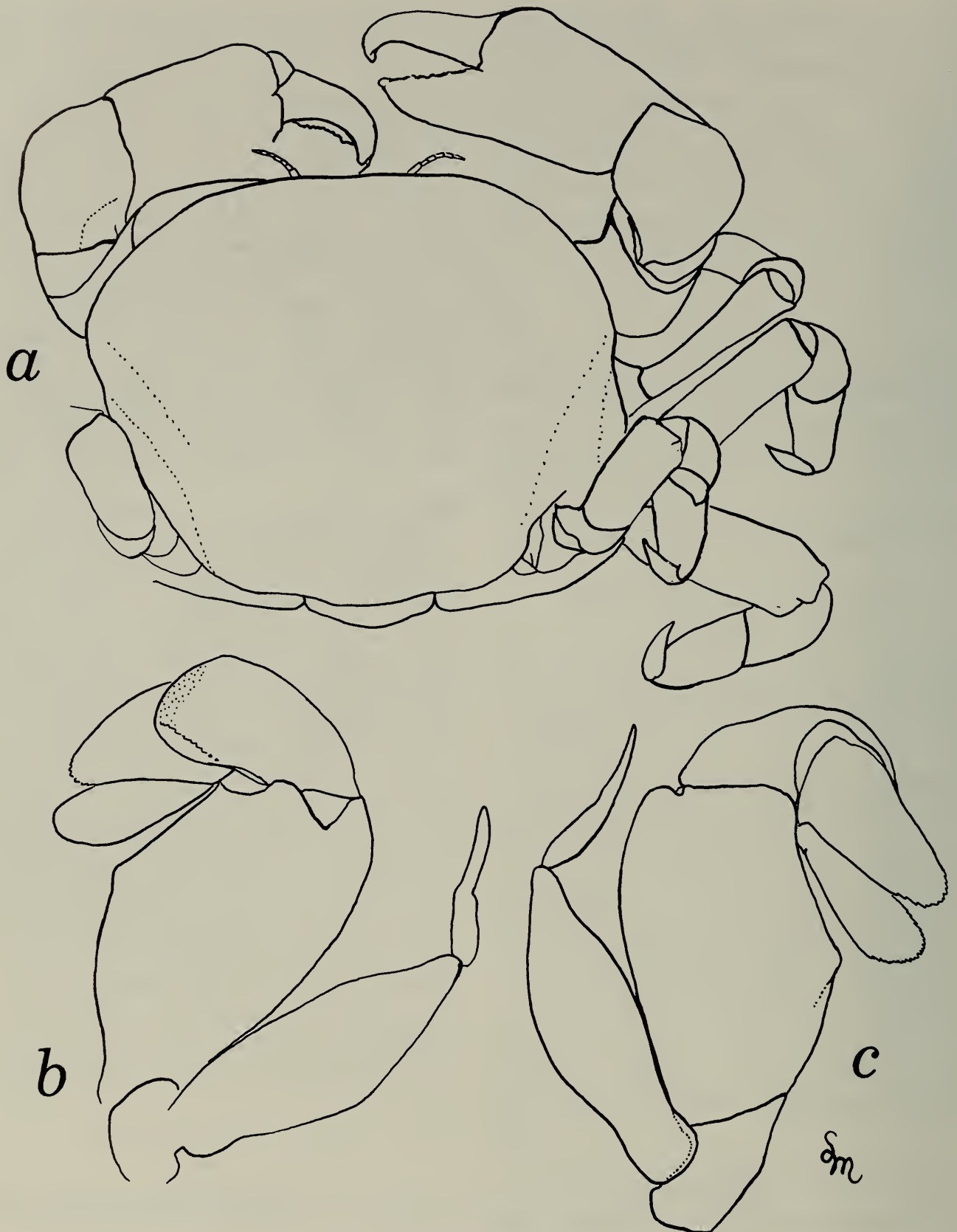


Fig. 2. *Holothuriophilus pacificus* (Poëppig), spent female, 11.5 × 14.2 mm, San Juan Bay, Peru, USNM 256986. a, Dorsal view (walking legs of left side omitted); b, Third maxilliped, inner aspect; c, Same, outer aspect.

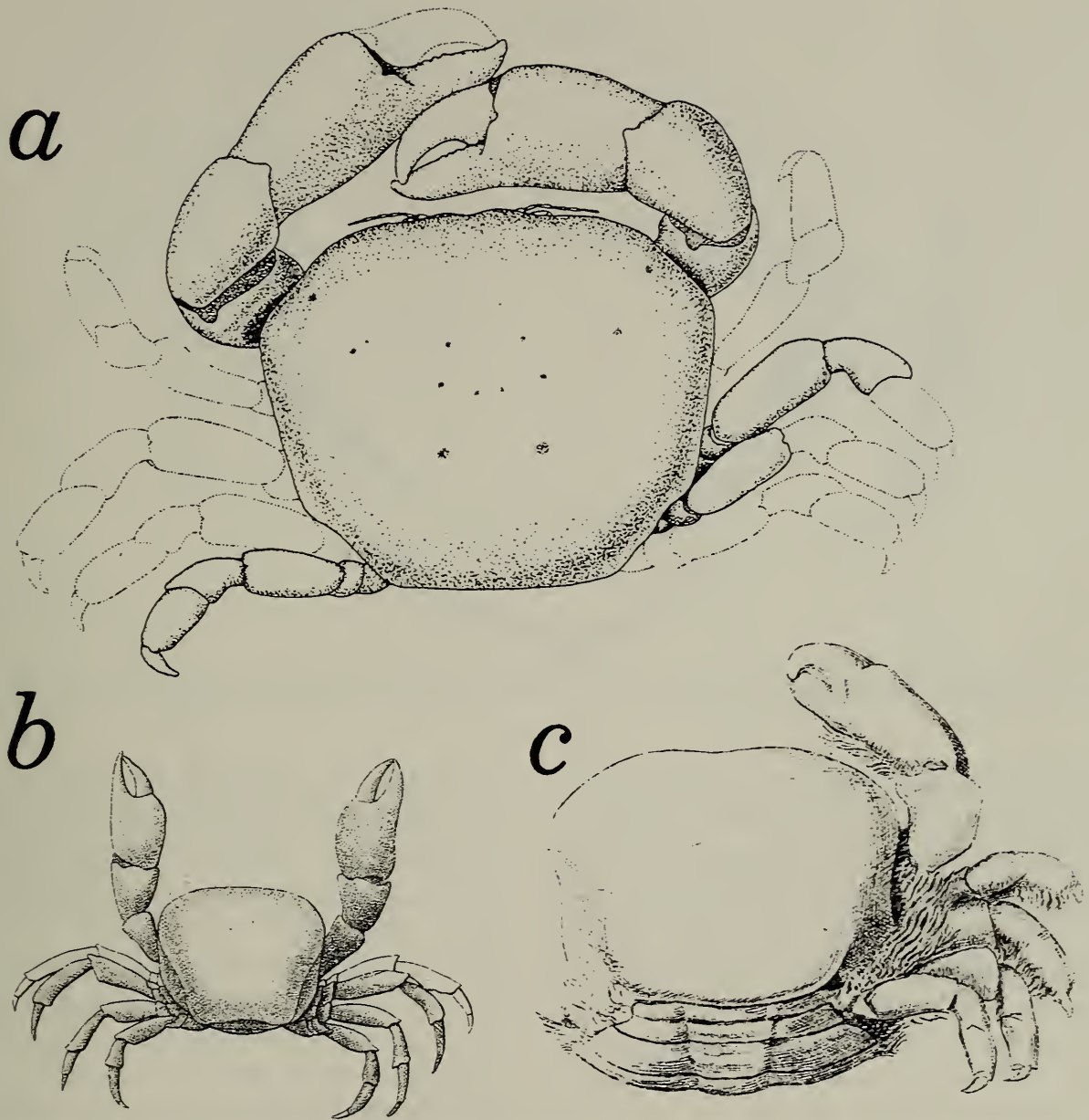


Fig. 3. Species of *Holothuriophilus*. a, *H. pacificus* (Poëppig), San Vicente, Chile [from Garth (1957:fig. 10A), as *Pinnaxodes silvestrii* (Nobili)]; b, *H. pacificus* (Poëppig), Talcahuano, Chile [from Poëppig (1836:pl. 4, fig. III), as *Leucosia pacifica*]; c, *Holothuriophilus trapeziformis* Nauck, Mazatlan, Mexico [from Bürger (1895:pl. 9, fig. 26)].

holothurians (see summary of Chilean pinnotherid hosts in Garth 1957:92).

The status of the other species listed in *Pinnaxodes* by Schmitt et al. (1973) should be re-examined, a task beyond the scope of this work.

In my opinion, *Holothuriophilus trapeziformis* Nauck, 1880 is congeneric with *Pinnaxodes silvestrii* (Nobili, 1901) and its junior synonym *Pinnaxodes meinerti* Rathbun, 1904; Garth (1957:88) synonymized

the latter two species. Nauck's species may be the northern counterpart of *H. silvestrii*.

I believe that *Leucosia pacifica* Poëppig, 1836, from Talcahuano, Chile, which was considered by Rathbun (1937:183, footnote) to be a pinnotherid and was listed as *incertae sedis* by Garth (1957:91) and Schmitt et al. (1973:137), is a species of *Holothuriophilus*. Poëppig's figure of his species shows a crab with the carapace shape of *Holothuriophilus*, broader than long, with

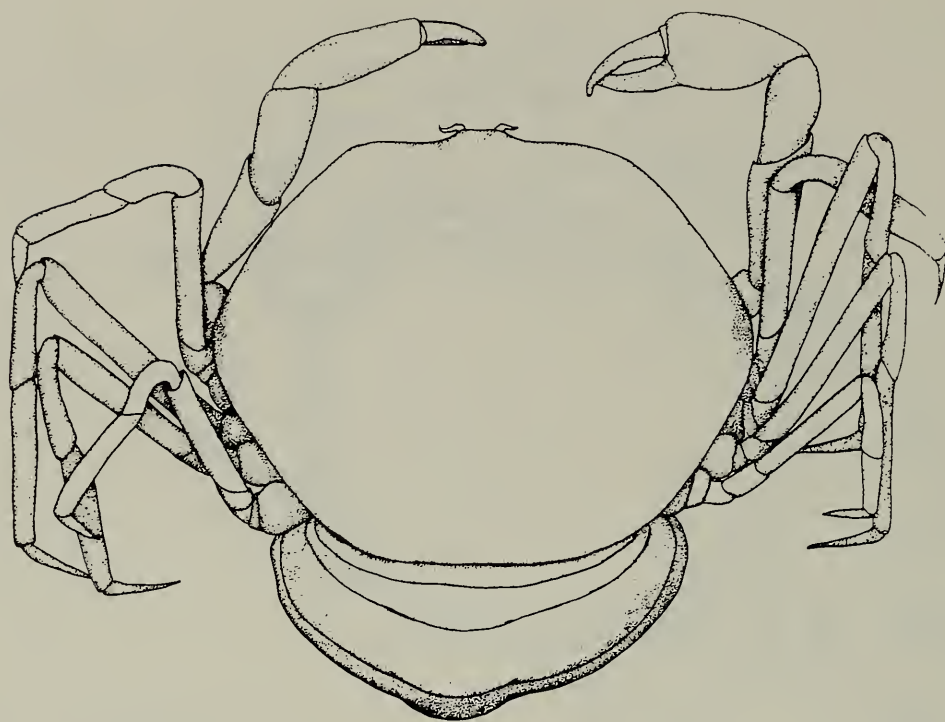


Fig. 4. *Zaops ostreum* (Say), adult female [from Williams (1984:fig. 354), as *Pinnotheres ostreum* Say].

its greatest width anteriorly, and the short dactyli characteristic of members of that genus. The third maxilliped shown by Poepig is extremely stylized and does not resemble that of members of either *Holothuriophilus* or *Pinnaxodes*. I consider *Leucosia pacifica* Poepig, 1836 to be a senior synonym of *Pinnaxodes silvestrii* (Nobili, 1901). That species should be known as *Holothuriophilus pacificus* (Poepig, 1836).

The figures of *H. pacificus* given by Poepig (as *Leucosia pacifica*) and Garth (as *Pinnaxodes silvestrii*) are reproduced here in Fig. 3, along with the figure of *H. trapeziformis* published by Bürger.

Known from the eastern Pacific. In holothurians.

Zaops Rathbun, 1900
Figs. 4–5

Zaops Rathbun, 1900:588, 590.

Type species. — *Pinnotheres depressum* Say, 1817, a subjective junior synonym and juvenile of *Pinnotheres ostreum* Say, 1817

(see Williams 1984:445), by original designation and monotypy. Gender masculine.

Diagnosis. — Carapace subhexagonal. Third maxilliped with ischium and merus indistinguishably fused; exopod with flagellum; propodus much longer than carpus; dactylus minute, inserted near midlength of ventral margin of propodus. Dactyli of walking legs dissimilar and unequal, that of second walking leg (P3) much the longest in adult females; propodus of first walking leg (P2) dilated distally in females. Abdomen of 7 segments in each sex.

Remarks. — The walking legs of the type species of *Zaops* are quite distinctive, with the club-shaped propodus on the first walking leg (P2) and the long dactylus on the second walking leg (P3). *Zaops ostreum* shares the distally dilated propodus of the first walking leg with the eastern Pacific *Pinnotheres clavapedatus* Glassell, 1935 [? = *Pinnotheres lithodomi* Smith, 1870], but Glassell's species differs in having expanded propodi on the first two walking legs (P2, P3) and a long dactylus on the third walking leg (P4) rather than on the second (P3).

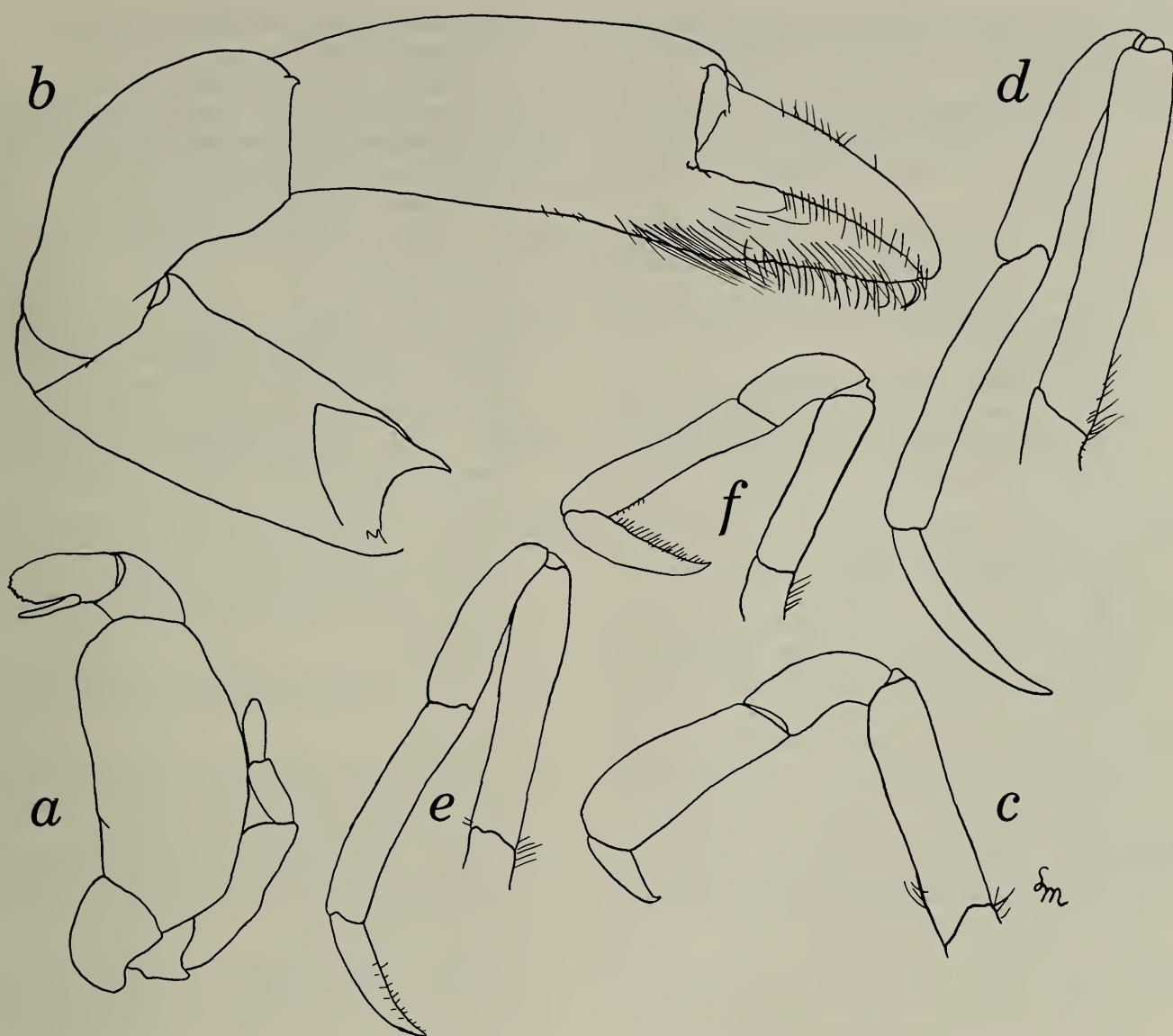


Fig. 5. *Zaops ostreum* (Say), spent female, 10.5 × 12.1 mm, market in New York, USNM 4991. a, Third maxilliped; b, Cheliped; c, Second pereopod; d, Third pereopod; e, Fourth pereopod; f, Fifth pereopod.

Zaops is monotypic. *Zaops ostreum* is known from localities between Massachusetts and Brazil in the western Atlantic (Williams 1984). In bivalve mollusks, especially the oyster, *Crassostrea virginica* (Gmelin); possibly in worm tubes (Williams 1984).

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